

## Economics 43535: Economics of Natural Resources

Spring 2014

Professor Jensen

**Office:** 921 Flanner

**Office Hours:** 12:30 p.m.–2:00 p.m. Monday and Wednesday, or by appointment.

**Office Phone:** 631-9382

**E-mail:** [rjensen1@nd.edu](mailto:rjensen1@nd.edu) (this is the best way to contact me outside of class)

**Classes:** 11:00 a.m.–12:15 p.m. Tuesday and Thursday, 725 Flanner

**Required Text:** None. I will provide some handouts from a variety of sources. There are many textbooks in environmental and natural resource economics, nearly all of which cover the issues in this course to some extent. There are used texts by Jonathan Harris, Tom Tietenberg & Lynne Lewis, and Frank Ward at Amazon – often for pennies – the latest edition is not necessary.

### Course Objectives

An important question, and key debate, faced by society is: can we alter our behavior to protect the environment and still provide a high standard of living? Economics can play an important role in this discussion because it provides a logical framework for determining the magnitude and significance of environmental problems and the set of feasible solutions to them. Economics is not the only approach to these problems, of course, but it is also important because environmental legislation mandates economic impact studies in a wide range of situations.

This is an introduction to economic aspects of the possible uses of natural resources, and of the methods used to value them. By the end of the course you should have an understanding of:

- (1) The various ways that society uses its natural resources, and the concomitant problems.
- (2) How to apply economics to analyze these problems and design policies designed to correct them; specifically:
  - (a) Determine the socially optimal use (i.e., consumption and production) of natural resources;
  - (b) Determine when and how the market outcome diverges from the social optimum;
  - (c) Determine policies that can be used to correct this divergence; and
  - (d) Evaluate the efficacy of these policies.
- (3) How to determine economic values for natural resources when they do not trade in the market, and thus do not have a “price” in the usual sense; specifically:
  - (a) What “willingness to pay” is and how it is estimated.
  - (b) What “willingness to accept” is and how it is estimated.
  - (c) When it is appropriate to use each of these approaches.
- (4) The extent to which an economic valuation of natural resources is credible.
  - (a) What we must assume about individual behavior for this analysis to be valid.
  - (b) What are the historical precedents for this general approach to valuation.
  - (c) How this approach compared and contrasts to ethical and theological views of value.

## Course Requirements and Evaluation

There will be four problem assignments and two written assignments (10-page papers, typed with 12-point font and 1-inch margins; page count does not include tables, figures or diagrams; provide references when needed). The weights used in determining the final grade are:

Problems (10% each)

Papers (25% each)

Class participation (10%)

Because Intermediate Microeconomic Theory is a prerequisite for this course, and Calculus II is a prerequisite for it, you will need to use algebra and some calculus to solve the problems (but the calculus you will need is limited to taking derivatives). And because this is a writing intensive course, you will be expected to write up your answers, not just provide your computations.

For the papers, I will do an initial grading and return them to you with comments for improvement (if needed). You can then revise and turn them in again for another grading. If you do, I will record the average of the two grades.

The grades on the homework assignments and exams will be averaged (using equal weights) to obtain a single, numerical final grade average. For the purposes of computing your final grade, that final grade average will be converted to a letter grade using the scale below.

94-100	A	87-89	B+	77-79	C+	67-69	D+	
90-93	A-	83-86	B	73-76	C	63-66	D	< 60 F
		80-82	B-	70-72	C-	60-62	D-	

## Ground Rules

- (1) Attendance is not required, but it is strongly recommended because all assignments and exams will be based on material covered in lectures.
- (2) If you do attend, I expect to pay attention, and not disturb your classmates or me – this means turn off cell phones, do not check mail, do not surf the web or read the newspaper. Don't come if you want to do those things during that time.
- (3) If you miss an exam, or a deadline for a homework assignment, a make-up exam will be provided, or you will be allowed to turn the homework in late, only if you have an officially verified excuse. If you know in advance that you may have a problem, I recommend that you inform me in writing as soon as possible. If you miss an exam or homework deadline without an official excuse, you will receive a grade of zero on it.
- (4) You may work with each other, and talk to anyone (including me), about the homework. Indeed, I encourage you to try to work out the problems separately, then meet with others to compare (and defend) your answers, and to combine forces in trying to solve more difficult problems. However, you are expected to do your own work and to write up your answers separately after you have met and discussed them.
- (5) Homework assignments and papers may be submitted either electronically at my email address, or in hard copy in class or at my office or mailbox.
- (6) The Academic Honor Code must be observed.
- (7) There is no option to do anything to earn extra credit.

## Course Outline and Important Dates

### I. Two Views of Sustainability

Weeks 1 and 2: Economic Sustainability and Ecological Sustainability

Paper #1 assigned Wednesday, Jan 29

### II. Traditional Natural Resource Economics

Weeks 3 and 4: Renewable Resources

Paper #1 due Wednesday, February 12

Homework #1 due Wednesday, February 19

Weeks 5 and 6: Nonrenewable Resources

Revision of Paper #1 due Wednesday, February 26

### III. Valuation of Natural Resources

Weeks 7 and 8: Direct (Active) Use vs Indirect (Passive) Use; Theory of Nonmarket Valuation

Homework #2 due Wednesday, March 19

Weeks 9 and 10: Methods of Valuation and their Limitations

### IV. The Economic Case for Preserving Natural Resources

Weeks 11 and 12: Benefit-Cost Analysis and Risk Analysis

Paper #2 assigned Wednesday, April 9

Homework #3 due Wednesday, April 9

Weeks 13 and 14: Examples (e.g., Exxon Valdez, National Parks, ANWR)

Paper #2 due Wednesday, April 23

Homework #4 due Wednesday, April 30

Tuesday, May 6: Final Summative Assessment, 4:15 - 6:15

Revision of Paper #2 due

**NOTE: Due to my duties as chairperson and conference schedule, I may miss two or three scheduled classes. These we will be made up at mutually agreeable times if needed.**